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Electromagnetic Emissions Test Report and Request for Class II Permissive Change pursuant to FCC Part 15, Subpart C Specifications for an Intentional Radiator on the Savi Technology, Inc. Model: ST-605-SL1

FCC ID:	KL7 -612T-V2
GRANTEE:	Savi Technology, Inc. 615 Tasman Drive Sunnyvale, CA. 94089-1707
TEST SITE:	Elliott Laboratories, Inc. 684 W. Maude Avenue Sunnyvale, CA 94086
REPORT DATE:	May 24, 2002
FINAL TEST DATE:	April 25, 2002

AUTHORIZED SIGNATORY: _____

David W. Maude
Chief Technical Officer

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SCOPE

An electromagnetic emissions test has been performed on the Savi Technology, Inc. model ST-605-SL1 pursuant to Subpart C of Part 15 of FCC Rules for intentional radiators. Conducted and radiated emissions data has been collected, reduced, and analyzed within this report in accordance with measurement guidelines set forth in ANSI C63.4-1992 as outlined in Elliott Laboratories test procedures.

The intentional radiator above has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC performance and procedural standards.

Final system data was gathered in a mode that tended to maximize emissions by varying orientation of EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization.

Every practical effort was made to perform an impartial test using appropriate test equipment of known calibration. All pertinent factors have been applied to reach the determination of compliance.

The test results recorded herein are based on a single type test of the Savi Technology, Inc. model ST-605-SL1 and therefore apply only to the tested sample. The sample was selected and prepared by Eugene Schlindwein of Savi Technology, Inc.

OBJECTIVE

The primary objective of the manufacturer is compliance with Subpart C of Part 15 of FCC Rules for the radiated and conducted emissions of intentional radiators. Certification of these devices is required as a prerequisite to marketing as defined in Part 2 the FCC Rules.

Certification is a procedure where the manufacturer or a contracted laboratory makes measurements and submits the test data and technical information to the FCC. The FCC issues a grant of equipment authorization upon successful completion of their review of the submitted documents. Once the equipment authorization has been obtained, the label indicating compliance must be attached to all identical units subsequently manufactured.

STATEMENT OF COMPLIANCE

The tested sample of Savi Technology, Inc. model ST-605-SL1 complied with the requirements of Subpart C of Part 15 of the FCC Rules for low power intentional radiators.

Maintenance of FCC compliance is the responsibility of the manufacturer. Any modification of the product that may result in increased emissions should be checked to ensure compliance has been maintained (i.e., printed circuit board layout changes, different line filter, different power supply, harnessing or I/O cable changes, etc.).

EMISSION TEST RESULTS

The following emissions tests were performed on the Savi Technology, Inc. model ST-605-SL1. The actual test results are contained in an exhibit of this report.

LIMITS OF CONDUCTED INTERFERENCE VOLTAGE

The requirements of FCC 15.207 do not apply to this device. The EUT is designed to operate from an internal battery cell. It is not operated, directly or indirectly, from an AC mains power supply.

LIMITS OF RADIATED FIELD STRENGTH – FUNDAMENTAL SIGNAL

The EUT tested complied with the limits detailed in FCC Rules Part 15 Section 15.231(e) for a device operating under part 15.231(e) of the FCC's rules.

The following measurement was extracted from the data recorded during the radiated electric field emissions scan and represents the highest amplitude emission relative to the specification limit. The actual test data and any correction factors are contained in an exhibit of this report.

Frequency MHz	Level dBuV/m	Pol v/h	15.231 (e) Limit	15.231(e) Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
433.897	71.8	V	72.9	-1.1	Avg Pulse	240	1.1	

LIMITS OF RADIATED FIELD STRENGTH – SPURIOUS SIGNALS

The EUT tested complied with the limits detailed in FCC Rules Part 15 Section 15.231(e) for spurious signals. The limits detailed in 15.209 were applied to emissions falling within the frequency bands specified in Section 15.205. All other emissions were subjected to the limits detailed in 15.231 for a device operating under section 15.231(e).

The following measurement was extracted from the data recorded during the radiated electric field emissions scan and represents the highest amplitude emission relative to the specification limit. The actual test data and any correction factors are contained in an exhibit of this report.

Frequency MHz	Level dBuV/m	Pol v/h	15.209 Limit	15.209 Margin	Detector Pk/QP/Avg	Azimuth degrees	Height meters	Comments
867.794	70.1	v	74.0	-3.3	Pk	92	1.0	

20dB BANDWIDTH MEASUREMENT

The EUT tested complied with the limits detailed in FCC Rules Part 15 Section 15.231. The 20 dB bandwidth was 465 kHz. The actual test data and any correction factors are contained in an exhibit of this report.

TIME OF TRANSMISSION

The intentional transmission from device is considered to be a control signal and so the requirements of 15.231(e) apply.

The theory of operations details how the device stops transmission within 5 seconds of being activated.

The transmissions are activated by a signal from another transmitter (the Savi Signpost) that occur on a random basis. Transmissions are, therefore, not at pre-determined intervals.

MEASUREMENT UNCERTAINTIES

ISO Guide 25 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level and were calculated in accordance with NAMAS document NIS 81.

Measurement Type	Frequency Range (MHz)	Calculated Uncertainty (dB)
Conducted Emissions	0.15 to 30	± 2.4
Radiated Emissions	30 to 1000	± 3.2

EQUIPMENT UNDER TEST (EUT) DETAILS

GENERAL

The Savi Technology, Inc. model ST-605-SL1 is a Security Tag, which is used in an inventory tracking system to allow logistic service providers to actively monitor security of shipments. Normally, the EUT would be mounted on a piece of capital equipment. The EUT was treated as tabletop equipment during testing to simulate the end user environment. The EUT is self-contained, with no interface ports for connection to external power or signal lines. It is powered via on-board cells.

The sample was received on April 25, 2002 and tested on April 25, 2002. The EUT consisted of the following component(s):

Manufacturer/Model/Description	Serial Number
Savi Technologies ST-605-SL1 Tag Reader	2001532

ENCLOSURE

The EUT enclosure is primarily constructed of molded plastic. It measures approximately 4 cm wide by 12 cm deep by 3 cm high without the mounting bracket. With the bracket it measures approximately 4 cm wide by 15 cm deep by 10 cm high.

MODIFICATIONS

The EUT did not require modifications during testing in order to comply with the emission specifications.

SUPPORT EQUIPMENT

No support equipment was used during emissions testing.

EUT INTERFACE PORTS

The device has no interface ports

EUT OPERATION DURING EMISSIONS

The EUT was transmitting continuously at 433 MHz

PROPOSED MODIFICATION DETAILS

GENERAL

This section details the differences between the Savi Technology, Inc. models ST-605-SL1 and ST-604-01. All performance and construction deviations from the characteristics originally reported to the FCC are addressed.

Enclosure

The enclosure differs slightly from the device previously certified to accommodate a locking bolt.

Circuitry

The circuitry changed to add sensors to detect the removal of the locking bolt from the hasp of a container and to transmit an alarm code.

TEST SITE

GENERAL INFORMATION

Final test measurements were taken on April 25, 2002 at the Elliott Laboratories Open Area Test Site #3 located at 684 West Maude Avenue, Sunnyvale, California. The test site contains separate areas for radiated and conducted emissions testing. Pursuant to section 2.948 of the Rules, construction, calibration, and equipment data has been filed with the Commission.

The FCC recommends that ambient noise at the test site be at least 6 dB below the allowable limits. Ambient levels are below this requirement with the exception of predictable local TV, radio, and mobile communications traffic. The test site contains separate areas for radiated and conducted emissions testing. Considerable engineering effort has been expended to ensure that the facilities conform to all pertinent FCC requirements.

CONDUCTED EMISSIONS CONSIDERATIONS

Conducted emissions testing is performed in conformance with ANSI C63.4-1992. Measurements are made with the EUT connected to the public power network through a nominal standardized RF impedance, provided by a line impedance stabilization network, known as a LISN. A LISN is inserted in series with each current-carrying conductor in the EUT power cord.

RADIATED EMISSIONS CONSIDERATIONS

The FCC has determined that radiation measurements made in a shielded enclosure are not suitable for determining levels of radiated emissions. Radiated measurements are performed in an open field environment. The test site is maintained free of conductive objects within the CISPR defined elliptical area incorporated in ANSI C63.4 guidelines.

MEASUREMENT INSTRUMENTATION

RECEIVER SYSTEM

An EMI receiver as specified in CISPR 16-1 is used for emissions measurements. The receivers used can measure over the frequency range of 9 kHz up to 2000 MHz. These receivers allow both ease of measurement and high accuracy to be achieved. The receivers have Peak, Average, and CISPR (Quasi-peak) detectors built into their design so no external adapters are necessary. The receiver automatically sets the required bandwidth for the CISPR detector used during measurements.

For measurements above the frequency range of the receivers, a spectrum analyzer is utilized because it provides visibility of the entire spectrum along with the precision and versatility required to support engineering analysis. Average measurements above 1000MHz are performed on the spectrum analyzer using the linear-average method with a resolution bandwidth of 1 MHz and a video bandwidth of 10 Hz.

INSTRUMENT CONTROL COMPUTER

The receivers utilize either a Rohde and Schwarz EZM Spectrum Monitor/Controller or contain an internal Spectrum Monitor/Controller to view and convert the receiver measurements to the field strength at an antenna or voltage developed at the LISN measurement port, which is then compared directly with the appropriate specification limit. This provides faster, more accurate readings by performing the conversions described under Sample Calculations within the Test Procedures section of this report. Results are printed in a graphic and/or tabular format, as appropriate. A personal computer is used to record all measurements made with the receivers.

The Spectrum Monitor provides a visual display of the signal being measured. In addition, the controller or a personal computer run automated data collection programs which control the receivers. This provides added accuracy since all site correction factors, such as cable loss and antenna factors are added automatically.

LINE IMPEDANCE STABILIZATION NETWORK (LISN)

Line conducted measurements utilize a fifty microhenry Line Impedance Stabilization Network as the monitoring point. The LISN used also contains a 250 uH CISPR adapter. This network provides for calibrated radio frequency noise measurements by the design of the internal low pass and high pass filters on the EUT and measurement ports, respectively.

FILTERS/ATTENUATORS

External filters and precision attenuators are often connected between the receiving antenna or LISN and the receiver. This eliminates saturation effects and non-linear operation due to high amplitude transient events.

ANTENNAS

A biconical antenna is used to cover the range from 30 MHz to 300 MHz and a log periodic antenna is utilized from 300 MHz to 1000 MHz. Narrowband tuned dipole antennas are used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna is used. The antenna calibration factors are included in site factors, which are programmed into the test receivers.

ANTENNA MAST AND EQUIPMENT TURNTABLE

The antennas used to measure the radiated electric field strength are mounted on a non-conductive antenna mast equipped with a motor-drive to vary the antenna height.

ANSI C63.4 specifies that the test height above ground for table mounted devices shall be 80 centimeters. Floor mounted equipment shall be placed on the ground plane if the device is normally used on a conductive floor or separated from the ground plane by insulating material from 3 to 12 mm if the device is normally used on a non-conductive floor. During radiated measurements, the EUT is positioned on a motorized turntable in conformance with this requirement.

INSTRUMENT CALIBRATION

All test equipment is regularly checked to ensure that performance is maintained in accordance with the manufacturer's specifications. All antennas are calibrated at regular intervals with respect to tuned half-wave dipoles. An exhibit of this report contains the list of test equipment used and calibration information.

TEST PROCEDURES

EUT AND CABLE PLACEMENT

The FCC requires that interconnecting cables be connected to the available ports of the unit and that the placement of the unit and the attached cables simulate the worst case orientation that can be expected from a typical installation, so far as practicable. To this end, the position of the unit and associated cabling is varied within the guidelines of ANSI C63.4, and the worst case orientation is used for final measurements.

CONDUCTED EMISSIONS

Conducted emissions are measured at the plug end of the power cord supplied with the EUT. Excess power cord length is wrapped in a bundle between 30 and 40 centimeters in length near the center of the cord. Preliminary measurements are made to determine the highest amplitude emission relative to the specification limit for all the modes of operation. Placement of system components and varying of cable positions are performed in each mode. A final peak mode scan is then performed in the position and mode for which the highest emission was noted on all current carrying conductors of the power cord.

RADIATED EMISSIONS

Radiated emissions measurements are performed in two phases as well. A preliminary scan of emissions is conducted in which all significant EUT frequencies are identified with the system in a nominal configuration. At least two scans are performed from 30 MHz up to the frequency required by the regulation specified on page 1. One or more of these is with the antenna polarized vertically while the one or more of these are with the antenna polarized horizontally. During the preliminary scans, the EUT is rotated through 360˚, the antenna height is varied and cable positions are varied to determine the highest emission relative to the limit.

A speaker is provided in the receiver to aid in discriminating between EUT and ambient emissions. Other methods used during the preliminary scan for EUT emissions involve scanning with near field magnetic loops, monitoring I/O cables with RF current clamps, and cycling power to the EUT.

Final maximization is a phase in which the highest amplitude emissions identified in the spectral search are viewed while the EUT azimuth angle is varied from 0 to 360 degrees relative to the receiving antenna. The azimuth that results in the highest emission is then maintained while varying the antenna height from one to four meters. The result is the identification of the highest amplitude for each of the highest peaks. Each recorded level is corrected in the receiver using appropriate factors for cables, connectors, antennas, and preamplifier gain. Emissions that have values close to the specification limit may also be measured with a tuned dipole antenna to determine compliance.

SPECIFICATION LIMITS AND SAMPLE CALCULATIONS

The limits for conducted emissions are given in units of microvolts, and the limits for radiated emissions are given in units of microvolts per meter at a specified test distance. Data is measured in the logarithmic form of decibels relative to one microvolt, or dB microvolts (dBuV). For radiated emissions, the measured data is converted to the field strength at the antenna in dB microvolts per meter (dBuV/m). The results are then converted to the linear forms of uV and uV/m for comparison to published specifications.

For reference, converting the specification limits from linear to decibel form is accomplished by taking the base ten logarithm, then multiplying by 20. These limits in both linear and logarithmic form are as follows:

CONDUCTED EMISSIONS SPECIFICATION LIMITS, SECTION 15.207

Frequency Range (MHz)	Limit (uV)	Limit (dBuV)
0.450 to 30.000	250	48

RADIATED EMISSIONS SPECIFICATION LIMITS, SECTION 15.231(e)

Fundamental Frequency (MHz)	Field Strength of Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)*
40.66 - 40.70	1,000	100
70 - 130	500	50
130 - 174	500 to 1,500 **	50 to 150 **
174 - 260	1,500	150
260 - 470	1,500 to 5,000 **	150 to 500 **
Above 470	5,000	500

* For emissions falling in the restricted bands detailed in 15.205, the limits of 15.209 given in the following table apply.
** linear interpolations

RADIATED EMISSIONS SPECIFICATION LIMITS, SECTION 15.209)

Frequency Range (MHz)	Limit (uV/m @ 3m)	Limit (dBuV/m @ 3m)
0.009-0.490	$2400/F_{KHz}$ @ 300m	$67.6-20*\log_{10}(F_{KHz})$ @ 300m
0.490-1.705	$24000/F_{KHz}$ @ 30m	$87.6-20*\log_{10}(F_{KHz})$ @ 30m
1.705 to 30	30 @ 30m	29.5 @ 30m
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

SAMPLE CALCULATIONS - CONDUCTED EMISSIONS

Receiver readings are compared directly to the conducted emissions specification limit (decibel form) as follows:

$$R_r - B = C$$

and

$$C - S = M$$

where:

R_r = Receiver Reading in dBuV

B = Broadband Correction Factor*

C = Corrected Reading in dBuV

S = Specification Limit in dBuV

M = Margin to Specification in +/- dB

* Broadband Level- Per ANSI C63.4, 13 dB may be subtracted from the quasi-peak level if it is determined that the emission is broadband in nature. If the signal level in the average mode is six dB or more below the signal level in the peak mode, the emission is classified as broadband.

SAMPLE CALCULATIONS - RADIATED EMISSIONS

Receiver readings are compared directly to the specification limit (decibel form). The receiver internally corrects for cable loss, preamplifier gain, and antenna factor. The calculations are in the reverse direction of the actual signal flow, thus cable loss is added and the amplifier gain is subtracted. The Antenna Factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements. A distance factor, when used for electric field measurements, is calculated by using the following formula:

$$F_d = 20*LOG_{10} (D_m/D_s)$$

where:

F_d = Distance Factor in dB

D_m = Measurement Distance in meters

D_s = Specification Distance in meters

Measurement Distance is the distance at which the measurements were taken and Specification Distance is the distance at which the specification limits are based. The antenna factor converts the voltage at the antenna coaxial connector to the field strength at the antenna elements.

The margin of a given emission peak relative to the limit is calculated as follows:

$$R_c = R_r + F_d$$

and

$$M = R_c - L_s$$

where:

R_r = Receiver Reading in dBuV/m

F_d = Distance Factor in dB

R_c = Corrected Reading in dBuV/m

L_s = Specification Limit in dBuV/m

M = Margin in dB Relative to Spec

EXHIBIT 1: Test Equipment Calibration Data

Radiated Emissions, 30 - 6500 MHz, 25-Apr-02
Engineer: Chris

Manufacturer	Description	Model #	Assett #	Cal interval	Last Calibrated	Cal Due
EMCO	Horn Antenna D. Ridge 1-18 GHz	3115	1386	12	1/31/2002	1/31/2003
EMCO	Log Periodic Antenna, 0.2-1 GHz	3146	1294	12	4/12/2002	4/12/2003
Filtek	High Pass Filter, 1GHz	HP12/1000-5AB	1343	12	10/15/2001	10/15/2002
Hewlett Packard	EMC Spectrum Analyzer 9kHz - 6.5GHz	8595EM	787	12	2/27/2002	2/27/2003
Hewlett Packard	Microwave Preamplifier, 1-26.5GHz	8449B	785	12	1/23/2002	1/23/2003
Rohde & Schwarz	Test Receiver, 20-1300MHz	ESVP	273	12	2/6/2002	2/6/2003

EXHIBIT 2: Test Data Log Sheets

ELECTROMAGNETIC EMISSIONS

TEST LOG SHEETS

AND

MEASUREMENT DATA

T47051 7 Pages

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EMC Test Data

Client:	Savi Technologies	Job Number:	J45962
Model:	ST-605-SL1	T-Log Number:	T47051
		Proj Eng:	Mark Briggs
Contact:	Gene		
Emissions Spec:	FCC 15.231(e)	Class:	N/A
Immunity Spec:	-	Environment:	-

EMC Test Data

For The

Savi Technologies

Model

ST-605-SL1

Client:	Savi Technologies	Job Number:	J45962
Model:	ST-605-SL1	T-Log Number:	T47051
		Proj Eng:	Mark Briggs
Contact:	Gene		
Emissions Spec:	FCC 15.231(e)	Class:	N/A
Immunity Spec:	-	Environment:	-

EUT INFORMATION

General Description

The EUT is a Security Tag which is used in an inventory tracking system to allow logistic service providers to actively monitor security of shipments. Normally, the EUT would be mounted on a piece of capital equipment. The EUT was treated as table-top equipment during testing to simulate the end user environment. The EUT is self contained, with no interface ports for connection to external power or signal lines. It is powered via on-board cells.

Equipment Under Test

Manufacturer	Model	Description	Serial Number	FCC ID
Savi Technologies	ST-605-SL1	Tag Reader	2001532	

EUT Enclosure

The EUT enclosure is primarily constructed of molded plastic. It measures approximately 4 cm wide by 12 cm deep by 3 cm high without the mounting bracket. With the bracket it measures approximately 4 cm wide by 15 cm deep by 10 cm high.

Modification History

Mod. #	Test	Date	Modification
1	-	-	-

Client:	Savi Technologies	Job Number:	J45962
Model:	ST-605-SL1	T-Log Number:	T47051
		Proj Eng:	Mark Briggs
Contact:	Gene		
Emissions Spec:	FCC 15.231(e)	Class:	N/A
Immunity Spec:	-	Environment:	-

Test Configuration #1

Local Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None				

Remote Support Equipment

Manufacturer	Model	Description	Serial Number	FCC ID
None				

Interface Ports

The device has no interface ports

EUT Operation During Emissions

The EUT was transmitting continuously at 433 MHz

Client:	Savi Technologies	Job Number:	J45962
Model:	ST-605-SL1	T-Log Number:	T47051
		Proj Eng:	Mark Briggs
Contact:	Gene		
Spec:	FCC 15.231(e)	Class:	N/A

Radiated Emissions

Test Specifics

Objective: The objective of this test session is to perform engineering evaluation testing of the EUT with respect to the specification listed above.

Date of Test:	4/25/2002	Config. Used:	1
Test Engineer:	jmartinez	Config Change:	None
Test Location:	SVOATS #3	EUT Voltage:	3.6 V

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated emissions testing.
On the OATS, the measurement antenna was located 10 meters from the EUT for the measurement range 30 - 1000 MHz and 3m from the EUT for the frequency range 1 - 10 GHz.
Note, for testing above 1 GHz, the FCC specifies the limit as an average measurement. In addition, the FCC states that the peak reading of any emission above 1 GHz, can not exceed the average limit by more than 20 dB.

Ambient Conditions:

Temperature: 15°C
Rel. Humidity: 45%

Summary of Results

Run #	Test Performed	Limit	Result	Margin
1a	RE, 30 - 1000MHz - Maximized Emissions	15.231(e) Fundamental	Pass	-1.1dB @ 433.897 MHz
1b	RE, 30 - 1000MHz - Maximized Emissions	15.231(e) Harmonics	Pass	-3.3dB @ 867.794 MHz

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

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EMC Test Data

Client:	Savi Technologies	Job Number:	J45962
Model:	ST-605-SL1	T-Log Number:	T47051
		Proj Eng:	Mark Briggs
Contact:	Gene		
Spec:	FCC 15.231(e)	Class:	N/A

Run #1a: Radiated Fundamental Emission, 30-1000 MHz

Frequency	Level	Pol	FCC 15.231 (e)		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
On its Side								
433.897	65.9	V	72.9	-7.0	Avg Pulse	72	1.1	
433.897	71.5	H	72.9	-1.4	Avg Pulse	209	1.0	
On its Back								
433.897	61.2	V	72.9	-11.7	Avg Pulse	40	1.0	
433.897	71.1	H	72.9	-1.8	Avg Pulse	339	1.0	
Upright								
433.897	71.8	V	72.9	-1.1	Avg Pulse	240	1.1	
433.897	60.7	H	72.9	-12.2	Avg Pulse	323	2.7	

Note 1:	-20 dB (10 mS On time and Off-time) Duty cycle applied to peak to get Average Reading

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EMC Test Data

Client:	Savi Technologies	Job Number:	J45962
Model:	ST-605-SL1	T-Log Number:	T47051
		Proj Eng:	Mark Briggs
Contact:	Gene		
Spec:	FCC 15.231(e)	Class:	N/A

Run #1b: Harmonic Emissions Readings.

Per ANSI 63.2-1992 (For Handheld or Bodyworn Transmitters) Test the fundaments in three orthogonal orientations. Final measurements of the harmonics

Frequency	Level	Pol	15.231(e) & 15.209		Detector	Azimuth	Height	Comments
MHz	dBµV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
EUT upright was worst case								
867.794	49.6	v	52.9	-3.3	Avg	108	1.3	Note 1
1301.690	50.1	v	54.0	-3.9	Avg	92	1.0	Note 1
1301.690	70.1	v	74.0	-3.9	Pk	92	1.0	
867.794	46.9	h	52.9	-6.0	Avg	0	1.0	Note 1
1735.590	45.7	v	54.0	-8.3	Avg	264	1.0	Note 1
1735.590	65.7	v	74.0	-8.3	Pk	264	1.0	
4338.970	37.5	v	54.0	-16.5	Avg	114	1.1	Note 1
4338.970	57.5	v	74.0	-16.5	Pk	114	1.1	
1301.690	36.8	h	54.0	-17.2	Avg	40	1.4	Note 1
1301.690	56.8	h	74.0	-17.2	Pk	40	1.4	
3905.070	35.7	v	54.0	-18.3	Avg	260	1.1	Note 1
3905.070	55.7	v	74.0	-18.3	Pk	260	1.1	
3905.070	34.3	h	54.0	-19.7	Avg	0	1.0	Note 1
3905.070	54.3	h	74.0	-19.7	Pk	0	1.0	
1735.590	35.8	h	54.0	-18.3	Avg	228	1.4	Note 1
1735.590	55.8	h	74.0	-18.3	Pk	228	1.4	
2603.380	35.4	v	54.0	-18.6	Avg	0	1.5	Note 1
2603.380	55.4	v	74.0	-18.6	Pk	0	1.5	
3037.280	35.2	h	54.0	-18.8	Avg	73	1.5	Note 1
3037.280	55.2	h	74.0	-18.8	Pk	73	1.5	
2603.380	34.9	h	54.0	-19.1	Avg	289	1.3	Note 1
2603.380	54.9	h	74.0	-19.1	Pk	289	1.3	
3417.180	34.5	v	54.0	-19.5	Avg	0	1.1	Note 1
3417.180	54.5	v	74.0	-19.5	Pk	0	1.1	
3037.280	33.8	v	54.0	-20.3	Avg	0	1.1	Note 1
3037.280	53.8	v	74.0	-20.3	Pk	0	1.1	
2169.490	32.3	v	54.0	-21.7	Avg	0	1.5	Note 1
2169.490	52.3	v	74.0	-21.7	Pk	0	1.5	
3417.180	32.3	h	54.0	-21.7	Avg	0	1.0	Note 1
3417.180	52.3	h	74.0	-21.7	Pk	0	1.0	
2169.490	30.3	h	54.0	-23.7	Avg	296	1.6	Note 1
2169.490	50.3	h	74.0	-23.7	Pk	296	1.6	
4338.970	34.2	h	54.0	-19.8	Avg	0	1.0	Note 1
4338.970	54.2	h	74.0	-19.8	Pk	0	1.0	

Note 1:	-20 dB (10 mS On time and Off-time) Duty cycle applied to peak to get Average Reading

EXHIBIT 3: Radiated Emissions Test Configuration Photographs

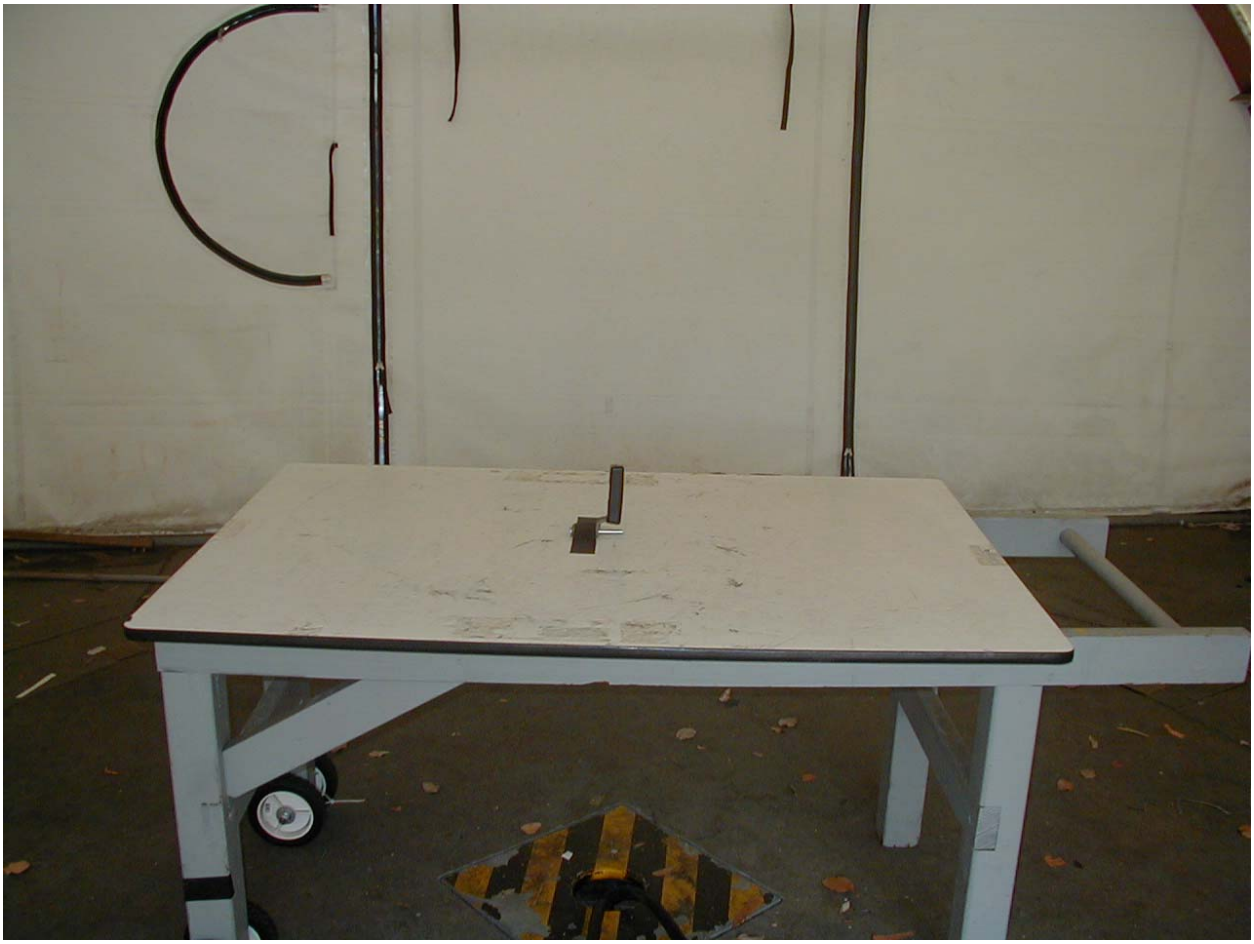

EXHIBIT 3: Radiated Emissions Test Configuration Photographs

EXHIBIT 4: Proposed FCC ID Label & Label Location

Unchanged from original application

EXHIBIT 5:Detailed Photographs of Savi Technology, Inc. Model ST-605-SL1 Construction

EXHIBIT 6: Operator's Manual for Savi Technology, Inc. Model ST-605-SL1

Unchanged from original application

EXHIBIT 7: Block Diagram of Savi Technology, Inc. Model ST-605-SL1

Unchanged from original application

EXHIBIT 8: Schematic Diagrams for Savi Technology, Inc. Model ST-605-SL1

EXHIBIT 9: Theory of Operation for Savi Technology, Inc. Model ST-605-SL1

Unchanged from original application